CLAIMS

1. A mechanism for transmitting torque between a shaft (12) and a hub (14) disposed around the shaft (12) while holding a shaft tooth section (22) formed on the shaft (12) and a hub tooth section (28) formed on the hub (14) in engagement with each other, wherein

said shaft tooth section (22) has a crowned peak (22a) having a varying tooth thickness and a valley (22b) having an outside diameter varying from an end thereof toward a shaft shank (24) of the shaft (12); and

said hub tooth section (28) has a straight peak (28a) having a constant tooth thickness and having an inside diameter varying from an end thereof toward said shaft shank (24) and a valley (28b) having a constant inside diameter in the axial direction of the shaft (12).

2. A mechanism according to claim 1, wherein a changing point of the outside diameter of the valley (22b) of said shaft tooth section (22) and a changing point of the inside diameter of the peak (28a) of said hub tooth section (28) are set in respective positions which are offset from each other in the axial direction of the shaft (12).

3. A mechanism according to claim 2, wherein said valley (22b) of said shaft tooth section (22) has a first step region (20) raised toward said hub tooth section (28),

and said peak (28a) of said hub tooth section (28) has a second step region (32) retracted away from said shaft tooth section (22), and wherein a starting point (P1) of said first step region (30) and a starting point (P2) of said second step region (32) are set in respective positions which are offset from each other by a predetermined distance (L4).

4. A mechanism according to claim 3, wherein said first step region (30) of said shaft tooth section (22) has a tilt angle (θ) set to a value ranging from 5 degrees to 45 degrees.

5. A mechanism according to claim 1, wherein different main load transmitting regions are provided depending on the magnitude of a load applied to an area where said shaft tooth section (22) and said hub tooth section (28) mesh with each other.

6. A mechanism according to claim 5, wherein the magnitude of the load selectively represents a low load, a medium load, and a high load, and said main load transmitting regions (a, b, c) for transmitting the low load, the medium load, and the high load, respectively, are established successively in a direction from a crowning top (P0) of crowned peak (22a) toward said shaft shank (24).

7. A mechanism according to claim 1, wherein said valley (22b) of said shaft tooth section (22) has an arcuate region (130) having a predetermined radius of curvature and extending toward said hub tooth section (28), and said peak (28a) of said hub tooth section (28) has a step region (132) facing said arcuate region (130) and retracted away from said shaft tooth section (22).

8. A mechanism according to claim 7, wherein a starting point (P1) of said arcuate region (130) joined to the valley (22b) of said shaft tooth section (22) and a starting point (P2) of said step region (132) joined to the peak (28a) of said hub tooth section (28) are set in respective positions which are offset from each other by a predetermined distance.

9. A mechanism according to claim 1, wherein said valley (22b) of said shaft tooth section (22) has a tapered region (230) having a diameter progressively increasing toward said hub tooth section (28), and said peak (28a) of said hub tooth section (28) has a step region (232) facing said tapered region (230) and retracted away from said shaft tooth section (22).

10. A mechanism according to claim 9, wherein a starting point (P1) of said tapered region (230) and a starting point (P2) of said step region (232) are set in

respective positions which are offset from each other by a predetermined distance.

11. A mechanism according to claim 9, wherein said tapered region (230) of said shaft tooth section (22) has a rise angle (θ) set to a value ranging from 6 degrees to 65 degrees.

12. A mechanism according to claim 1, wherein said peak (28a) of said hub tooth section (28) has a tapered region (336) having a diameter progressively increasing away from said shaft tooth section (22).

13. A mechanism according to claim 1, wherein said peak (28a) of said hub tooth section (28) has an arcuate region (338) having a predetermined radius of curvature and retracted away from said shaft tooth section (22).

14. A mechanism according to claim 1, wherein said peak (22a) of said shaft tooth section (22) has an outside diameter which is constant in the axial direction of said shaft (12).

15. A mechanism according to claim 1, wherein said peak (22a) of said shaft tooth section (22) has an outside diameter which varies in the axial direction of said shaft (12).

16. A mechanism according to claim 15, wherein said peak (22a) of said shaft tooth section (22) has an outside diameter which gradually decreases toward said shaft shank (24).

17. A mechanism for transmitting torque between a shaft (12) and a hub (14) disposed around the shaft (12) while holding a shaft tooth section (22) formed on the shaft (12) and a hub tooth section (28) formed on the hub (14) in engagement with each other, wherein

said shaft tooth section (22) has a crowned peak (22a) having a varying tooth thickness and a valley (22b) having an outside diameter varying from an end of the shaft (12) toward a shaft shank (24) of the shaft (12); and

said hub tooth section (28) is straight and has a constant tooth thickness, said hub tooth section (28) having a peak (28a) and a valley (28b) which have a constant inside diameter in the axial direction of the shaft (12) from the end toward said shaft shank (24).